NAVAL BASE PHILADELPHIA-PHILADELPHIA NAVAL SHIPYARD,
DRYDOCK No. 3
League Island
Philadelphia
Philadelphia County
Pennsylvania

HAER No. PA-387-C

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

HAER
PA
51-PHILA
709C-

HISTORIC AMERICAN ENGINEERING RECORD

NAVAL BASE PHILADELPHIA - PHILADELPHIA NAVAL SHIPYARD,
DRYDOCK No. 3

HAER No. PA-387-C

Location:	East of Fifth Street West, south of Porter Avenue-Philadelphia Naval Shipyard on League Island at the confluence of the Delaware and Schuylkill Rivers, in the City of Philadelphia, County of Philadelphia, Pennsylvania.
UTM Coordinates:	Zone Easting Northing 18 484220 4415130 Quad: Philadelphia, PA. - N.J. 1:24000
Dates of Construction:	1917-1921
Foundation/Construction:	Earth/Concrete
Engineers/Contractors:	Maryland Dredging & Contracting Company
Present Owner:	Commander, Naval Base Philadelphia - Department of the Navy
Present Use:	Currently in use for ship scrapping operations. Drydock No. 3 is 1011 feet long, 135 feet wide and 52 feet, 9 inches deep.
Significance:	This drydock was proposed in 1912 when it became obvious that the upcoming generation of battleships could not be accommodated in Philadelphia's existing facilities. The original design was unusual. It was a tandem design with one drydock having an entrance from the reserve basin and the other from the Delaware River. A specially built caisson would divide the two drydocks. By removing all caissons, an additional emergency passageway from the Basin to the River would be created. The design had strong support, but never received sufficient funding to build the section opening on the reserve basin. The basic requirement was to build a drydock capable of accommodating any ship that could pass through the Panama Canal. During excavation an unstable soil condition was discovered. This required a major change in construction technique to stabilize the soil. The drydock has been used for both construction and repair of vessels.
Historian:	Robert C. Stewart, July 1994
Project Information:	This documentation project is part of the Historic American

Engineering Record (HAER), a long range program to document historically significant engineering and industrial works in the United States. The HAER program is administered by the Historic American Buildings Survey/Historic American Engineering Record Division (HABS/HAER) of the National Park Service, U.S. Department of the Interior. The Naval Base Philadelphia - Philadelphia Naval Shipyard recording project was cosponsored during the summer of 1994 by HABS/HAER under the general direction of Dr. Robert J. Kapsch, Chief, and by Naval Base Philadelphia, under the command of Rear Admiral Louise C. Wilmot.

The field work, historical reports and photographs were prepared under the direction of project leader Dean Herrin, HAER Historian and Craig Strong, HAER Architect. The recording team consisted of Robert C. Stewart, Historical Archaeologist, West Suffield, CT. The historical section of the report was produced by John Bacon, Philadelphia Maritime Museum and Robert C. Stewart. Jet Lowe, HAER, was responsible for formal photography. The interpretive drawings were delineated by Doug Anderson.

Others who contributed their time, advice, documents and help were: Jane Allen (Philadelphia Maritime Museum), Dan Cashin (Chief, Rigger Apprentice Training), Alfred Cavallero (Manager Design Branch-Public Works Engineering), Rich Chlan (Public Affairs Officer-PNSY), Ed Delany (Fire Administration), Ralph Edelman (Quality Assurance), John Fedak (coppersmith), Robert Gorgone (Deputy Business and Strategic Planning Officer-PNSY), John Hilliard (upholsterer), Ed Jones (Boilermakers), Frank Matusik (Foreman - Lofting), Frank Mellert (Architect - Public Works Engineering), Rosalie Moschella Pinto (Tacker - retired, 26 shop), Paul Niessner (Equipment Specialist - Cranes), Ed Ochmanowicz (Superintendent 31 Shop - Inside Machining), Steve Pandur (Leadingman - Fabric Workers - Sail Loft), Elaine Pelagruto (Beacon Editor), Tom Pierson (Loftsman), Cece Saunders (Historical Perspectives), Richard Scardino (Leadingman -11 shop - ship fitting), Martin Sheeron (Superintendent - Boilermakers), Commander Walter T. Talunas, USNR (Human Resources Transition Coordinator).

For additional information, see the following HAER documentation:

HAER No. PA-387	NAVAL BASE PHILADELPHIA - PHILADELPHIA NAVAL SHIPYARD (Overview, includes bibliography)
HAER No. PA-387-A	NBP-PNSY, DRYDOCK No. 1
HAER No. PA-387-B	NBP-PNSY, DRYDOCK No. 2
HAER No. PA-387-D	NBP-PNSY, DRYDOCK No. 4
HAER No. PA-387-E	NBP-PNSY, DRYDOCK No. 5
HAER No. PA-387-F	NBP-PNSY, 350-TON HAMMERHEAD CRANE
HAER No. PA-387-G	NBP-PNSY, 3,000-POUND CRANE
HAER No. PA-387-H	NBP-PNSY, MANAGEMENT ENGINEERING (Bldg. No. 4)
HAER No. PA-387-I	NBP-PNSY, SUPPLY DEPT. STOREHOUSE (Bldg. No. 5)
HAER No. PA-387-J	NBP-PNSY, COMMANDER'S OFFICE-NAVAL BASE (Bldg. No. 6)
HAER No. PA-387-K	NBP-PNSY, STEEL STOREHOUSE (Bldg. No. 8)
HAER No. PA-387-L	NBP-PNSY, CARPENTRY SHOP (Bldg. No. 14)
HAER No. PA-387-M	NBP-PNSY, MACHINE SHOPS (Bldgs. No. 16 & 18)
HAER No. PA-387-N	NBP-PNSY, MACHINE SHOPS (Bldgs. No. 17 & 19)
HAER No. PA-387-O	NBP-PNSY, FOUNDRY/PROPELLER SHOP (Bldg. No. 20)
HAER No. PA-387-P	NBP-PNSY, STRUCTURAL SHOP (Bldg. No. 57)
HAER No. PA-387-Q	NBP-PNSY, AIRCRAFT STOREHOUSE (Bldg. No. 76)
HAER No. PA-387-R	NBP-PNSY, AIRCRAFT ASSEMBLY SHOP PLANT No. 2 (Bldg. No. 77H)
HAER No. PA-387-S	NBP-PNSY, STRUCTURAL ASSEMBLY SHOP (Bldg. No. 541)
HAER No. PA-387-T	NBP-PNSY, PIPE COPPERSMITH SHOP (Bldg. No. 543)
HAER No. PA-387-U	NBP-PNSY, MATERIAL ASSEMBLY SHOP (Bldg. No. 592)
HAER No. PA-387-V	NBP-PNSY, MAIN SUPPLY WAREHOUSE (Bldg. No. 624)
HAER No. PA-387-W	NBP-PNSY, RESERVE BASIN AND MARINE RAILWAY

DRYDOCK No. 3

In the years just prior to World War I, the new generation of battleships were larger than any naval vessels previously built. Existing drydocks at the Philadelphia Navy Yard could not receive them. In 1912 a third and larger drydock was proposed. It was proposed to extend from the Delaware River to the Reserve Basin with a specially constructed caisson in the middle. Two drydocks would be actually built, one fronting on the Basin and one on the river. By removing the caisson in the middle, an emergency passage from the basin to the river would be available.

The construction was significantly different from Drydocks No. 1 and No., and later No. 4 and No. 5. All these used timber or steel piling to withstand the hydraulic forces that exert upward pressure on drydocks and may cause them to "float" on the muddy earth where they are generally built. At League Island piles driven 50-feet or more were capped and form a massive foundation to anchor the drydock floor. Drydock No. 3 relies on the weight of a thick poured concrete floor to anchor the drydock.

The idea was favorably received but never was funded to build the Basin side dock. Eventually the Board of Development of Navy Yards recommended that a 1000 foot drydock capable of accepting any ship that could pass through the Panama Canal be constructed west of drydock No. 2. On April 25, 1917 a contract was concluded with the Maryland Dredging & Contracting Company of Baltimore. Work started on the $2,475,000 project on May 1, 1917. On August 3, 1918 a small earth slide occurred on the east bank near the head of the dock. Soil analyses indicated that additional slides could be expected. If the banks were excavated at an angle that soil stability required, excessive excavation and concrete would be required at an unacceptable increase in cost. Instead the method of construction was changed, and the excavated walls were stabilized with large quantities of iron sheeting. The contractor would not proceed until he was reimbursed for the extra expense and was assured of government approval for the new scheme. A supplemental agreement was executed which protected the contractor against loss but at the same time prevented him from making any profit. Work proceeded satisfactorily.

Drydock No. 3 has three 54" main discharge pumps, two 15" drainage pumps, one 3" sump pump and three triplex pumps. Worthington Pump and Manufacturing Company received the pump contract. The drydock has an elevator. The caisson was constructed by the Manufacturing department of the Navy Yard. The original cost of drydock No. 3 was fixed at $3,500,000. Because of inflation in the post war period and the problems encountered with construction, costs escalated to $6,300,000.

Dimensions of Drydock No. 3:

Length of coping from head to outer sill	754' 6-7/8"
Length of floor from head to outer sill	1006' 4"

Width of entrance at coping	135' 9-1/4"
Width on floor in body of dock	111' 10"
Depth over sill at mean high water	39' 11"

In theory the largest ship that could be docked is one 984 feet, 4 inches long, 114 feet 2 inches in the beam and drawing 39 feet 11 inches at mean high water. The dock could be pumped dry in 2 hours and filled in 1 hour and 40 minutes.[1]

For a list of related sources, see the bibliography at the end of the written report for HAER No. PA-387, Naval Base Philadelphia - Philadelphia Naval Shipyard.

---

[1]A. R. Ritter "A Brief History of the Philadelphia Navy Yard from its Inception to December 31, 1920." Beacon archives (PNSY newspaper), (1921): 2.